PUBLIC REVIEW DRAFT
North Ridge Estates - RI/FS Work Plan

Prepared for

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ACRONYMS

ACBM	asbestos containing building material
ACM	asbestos containing material
AOC	Administrative Order on Consent
ARAR	applicable or relevant and appropriate requirements
ATSDR	Agency for Toxic Substance and Disease Registry
bgs	below ground surface
BOM	bills of materials
CAB	cement asbestos board
CERCLA Act	Comprehensive Environmental Response Compensation and Liability
CFR	Code of Federal Regulations
COC	contaminant of concern
COPCs	contaminants of potential concern
DEQ	Oregon Department of Environmental Quality
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DHS	Oregon Department of Human Services
DOD	United States Department of Defense
DQO	data quality objective
E&E	Ecology & Environment, Inc.
EPA	United States Environmental Protection Agency
FS	feasibility study
FSP	field sampling plan
ft^2	square feet
FUDS	formerly used defense site
g/cm^2	grams per square centimeter
gpm	gallons per minute
GSA	General Services Administration
HASP	health and safety plan
IARC	International Agency for Research on Cancer
IC	institutional controls
IRIS	Integrated Risk Information System
ISO	International Organization of Standards
lbs	pounds

ACRONYMS (CONTINUED)

MAO	Mutual Agreement Order
MBK	Melvin Bercot Kenneth Partnership
MBTA	Migratory Bird Treaty Act
MILCON	military construction
mm/year	millimeters per year
mg/kg	milligrams per kilogram
MRB	Marine Recuperation Barracks
Navy	United States Navy
NBEC	nitrate base explosive compounds
NCP	National Contingency Plan
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NPL	National Priorities List
NRCS	Natural Resources Conservation Service
NRE	North Ridge Estates
OAR	Oregon Administrative Rules
OCS	Oregon Climate Society
OERR	Office of Emergency and Remedial Response
ORNHIC	Oregon Natural Heritage Information Center
ORS	Oregon Revised Statutes
OSC	on-scene coordinator
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
OTI	Oregon Technical Institute
OWRD	Oregon Water Resources Department
PAHs	Polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PCME	phase contrast microscopy equivalent
PEL	permissible exposure limit
PHC	Public Health Consultation
PLM	Polarized light microscopy
PPE	personal protective equipment
ppm	parts per million
PRG	preliminary remediation goal

ACRONYMS (CONTINUED)

PX	post exchange
QAPP	Quality Assurance Project Plan
RACM	Regulated asbestos containing material
RAO	remedial action objective
RBC	risk-based concentration
RI	remedial investigation
ROD	Record of Decision
RP	responsible party
S/cc	structures per cubic centimeter
S/g	structures per gram
SAP	sampling and analysis plan
SARA	Superfund Amendments and Reauthorization Act of 1986
SHINE	Superfund Health Investigation and Education Program
SSL	soil screening level
START	Superfund Technical Assistance and Response Team
SVOC	semi-volatile organic compound
TBC	to be considered
TCE	trichloroethylene
TEM	transmission electron microscopy
TPH	total petroleum hydrocarbons
TSI	thermal system insulation
UAO	Unilateral Administrative Order
UCL	upper confidence limit
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USGS	United States Geologic Survey
VAT	vinyl asbestos tile
VOC	volatile organic compounds
WAA	War Assets Administration
WWII	World War II
XRF	x-ray fluorescence

ACRONYMS (CONTINUED)

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EXECUTIVE SUMMARY

This document is a work plan for a Remedial Investigation/Feasibility Study (RI/FS) at the North Ridge Estates (NRE) site, located approximately 3 miles north of the City of Klamath Falls in south-central Oregon. This work plan outlines the RI/FS activities that will be conducted by US Environmental Protection Agency (EPA) at the NRE site. The RI will characterize the nature and extent of environmental contamination and estimate potential human health and ecological risks at the site. The FS will evaluate potential remedial actions to address any unacceptable risks.

Currently a residential development, the NRE site was formerly the Klamath Falls Marine Recuperation Barracks (MRB) facility, built to house recuperating veterans returned from the South Pacific after World War II (WWII). With over 80 buildings, the facility was constructed in 1944 and operated until 1946. The site was later used by the Oregon Technical Institute (OTI), and then transferred into private ownership in 1966.

From 1966 through the mid 1970s, some of the site buildings were demolished and materials such as copper and wood were salvaged. A private developer purchased the property in 1977 and demolished the majority of the remaining buildings. The developer subdivided the property into residential lots, and construction of homes in the subdivision began in 1993.

The process of demolishing the barracks buildings left debris which contained asbestos on the site. This asbestos containing material (ACM) included cement asbestos board (CAB) siding, roofing, floor tiles and pipe insulation. Much of the ACM was buried in shallow burial areas or spread across the site. It is also possible that non-ACM contaminants of potential concern (COPCs) associated with previous site operations may have been released at the site.

In July 2001, the Oregon Department of Environmental Quality (DEQ) responded to a complaint about exposed asbestos pipe insulation in the NRE development. DEQ visited the site and observed two large piles of pipe that contained insulation on the surface of the ground. In addition, white to pale brown-colored platy-looking rock fragments (presumably CAB) were observed on the ground of the property and surrounding properties. Samples were taken that showed the sampled material contained asbestos at levels of 10 to 90 percent.

The Oregon Department of Human Services (DHS) determined in 2003 that the NRE site was a past and present public health hazard due to the known health risks from exposure to friable (brittle or crumbling) asbestos. A variety of state and EPA regulatory and enforcement actions have been undertaken at the site to address the potential exposure of residents to asbestos. These actions include removal of surficial ACM, reconnaissance and stabilization of burial areas, air and soil sampling to assess the potential health risks, and temporary relocation of some residents during the summer of 2005. A recent legal settlement with the developer will result in most of the residents permanently leaving the site in mid-2006; however, a few residents have chosen to remain.

Despite the actions-to-date, ACM continues to appear at the surface in many places at the site. This reappearance is presumably due to a combination of surface erosion, frost heave, and freeze-thaw cycles. Once at the surface, the ACM can break down and release asbestos fibers to surface soil and air. The breakdown of ACM and release of asbestos fibers can be an ongoing source of exposure to residents in the area. Exposure to asbestos can increase the risk of both cancer and non-cancer diseases.

In addition to the use of ACM, historic uses at the site included activities that may have been associated with the release of hazardous substances other than asbestos. These substances may also present a potential risk to human health or the environment.

The focus of the RI/FS activities for the NRE site in general will be to assess potential human health and ecological risks presented by the contamination at the site, and to determine appropriate remedial actions that should be taken to address those risks. A considerable amount of investigation has already been completed to locate ACM at the site. The remaining work to complete the RI/FS will focus on resolving several key issues and performing the assessment of remedial actions potentially required. The remaining RI/FS issues to be evaluated include the following four items:

1. The reappearance of friable ACM at the surface is expected to continue. Because screening level calculations indicate that it is not practical to delineate unacceptable levels of ACM in subsurface soil, it will be assumed that all areas of the site that have had visible ACM on the surface or are in the vicinity of former base buildings contain potentially unacceptable levels of ACM. Those areas characterized as having ACM will be considered to present unacceptable potential future health risks and will be evaluated for remedial action.
2. There is a potential risk to current residents from exposure to asbestos fibers that have already been released to surface soils and may be present in the residents' homes. These risks can be presented by exposure to indoor air and dust or by outdoor activities that could disturb soils containing the fibers. The potential for current health risk to residents who remain at the site will be evaluated.
3. There are several relatively large land units where large quantities of ACM are known or suspected to have been disposed. In several cases non-ACM contaminants of potential concern (COPCs) may also be present in those units. For purposes of FS analysis, the presence, condition, and approximate quantity of the material in these land units will be determined. The large land unit analysis will allow for evaluation of potential remedial alternatives.
4. Various historical human activities at the site have been known, at similar sites, to result in the release of hazardous substances into media such as soil, including activities associated with operation of the barracks facility and university and with demolition of buildings associated with those operations. It is possible that these hazardous substances are present at concentrations exceeding health-based criteria. However, except in a limited number of cases, the presence of these substances at the site has not been determined. The presence of hazardous substances other than asbestos will be evaluated in the RI/FS. If these substances are present above levels of concern, remedial actions will be evaluated.

The RI/FS will follow the general steps outlined in federal and state laws and regulations. These steps include scoping of the RI/FS, conducting the RI, assessment of risks through a baseline risk assessment, and identification and evaluation of remedial alternatives through a FS. The process of identifying and assessing potential remedial actions will occur concurrently with the RI, with the final assessment summarized in the FS. Community involvement activities will be performed throughout the process. The RI/FS will be performed over an approximately 1.5-year period.

Following completion of the RI/FS, EPA will prepare a Proposed Plan which identifies the preferred remedial action. This Proposed Plan will include summaries of cleanup alternatives evaluated for use at this site and the rationale for selecting a preferred alternative. The Plan will be released to the public for review and comment. After public comments are reviewed and considered, EPA, with input from the State of Oregon, will select a final remedy. The final remedy decision will be documented in a Record of Decision (ROD) for the site.